

ABSTRACT

Disclosed is a $12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ compound, a $12\text{SrO} \cdot 7\text{Al}_2\text{O}_3$ compound, or a mixed crystal compound of $12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ and $12\text{SrO} \cdot 7\text{Al}_2\text{O}_3$, which contains a negative hydrogen ion (H^- , H^{2-} , H_2^-) at a concentration of $1 \times 10^{18} \text{ cm}^{-3}$ or more. A negative hydrogen ion comprising a primary component of a hydride ion is incorporated into C12A7 ($12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$), so that a function of being converted from an insulative material to an electrically conductive material in a sustained manner by means of irradiation with light can be exhibited even in the normal atmosphere at a room temperature. The present invention also provides a solid electrolyte capable of conducting a negative hydrogen ion, and means for releasing a hydride ion from the inside of a solid into a gaseous phase using an electric field.